

Remarks

Claims 1-30 are pending. Claims 16-26 are allowed. Claims 1-15 and 27-30 are rejected. Claims 1-11, 13-15 and 27-30 stand rejected under 35 U.S.C. 102(e) as being anticipated by Gai (US 6,892,237). Claims 1 and 10 have been amended. Claims 4-5, 12, and 27-30 have been cancelled. The Applicant respectfully requests reconsideration and allowance of the claims in light of the above amendment and the following remarks.

Specification

The Examiner states that a “summary in accordance with 37 CFR 1.73 and MPEP § 608.01(d) is requested.” Office Action dated November 4, 2008, page 2. The Examiner also states that “the current summary of the invention is objected to because it is no different than the independent claim.” Office Action dated November 4, 2008, page 2.

However, 37 CFR 1.73 states:

A brief summary of the invention indicating its nature and substance, which may include a statement of the object of the invention, should precede the detailed description. Such summary should, *when set forth*, be commensurate with the invention as claimed and any object recited should be that of the invention as claimed.
(emphasis added.)

It is therefore apparent that the Summary of the Invention is optional (“when set forth”). The Applicant respectfully points out three examples of issued patents that omit a summary section as follows: U.S. Pat. Nos. 7,441,038, issued October 21, 2008; 7,392,275, issued June 24, 2008; and 7,383,351 issued June 3, 2008, all of which were examined by the present Examiner. The Applicant could provide several examples of issued US Patents that do not contain a Summary of the Invention, if so desired. The Applicant has amended the specification to remove the Summary section, which reflects the application as originally filed. Therefore, withdrawal of the objection is respectfully requested.

Responsive to Supplemental Final Office Action dated December 30, 2008

The Applicant brought to the Examiner’s attention that the status of claim 12 was not clear. The Examiner indicated that claim 12 was inadvertently omitted from the Office Action and therefore issued the supplemental Final Office Action. Pertaining to claim 12, the Examiner states that “[i]t is inherent that entries in a memory are accessed by a self-

incrementing counter in response to an op-code (action section of the entries in a rule table). It is inherent because without the self-incrementing counter, the entries stored in a memory could not be retrieved.”

The Applicant respectfully disagrees and points out that “[t]he fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic. . . . To establish inherency, the extrinsic evidence ‘must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill’” See MPEP 2112, Requirements of Rejection Based on Inherency; Burden of Proof, IV. Examiner Must Provide Rationale Or Evidence Tending To Show Inherency, *citing In re Robertson*, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999).

Claim 12 sets forth “the local memory also to store a counter table, wherein the action in a rule table entry comprises an index into the counter table, the action unit responding to the counter table index and a match indicated by the match circuitry by incrementing an entry in the counter table referenced by the counter table index.” It should be noted that the limitations of claim 12 have been moved into claim 10. The Applicant submits that even if reading entries stored in a memory requires a self-incrementing counter, as suggested by the Examiner, the Office Action nevertheless fails to show that the extrinsic evidence makes clear that the missing descriptive matter (the rule table entry comprising an index into the counter table, the action unit responding to the counter table index and a match indicated by the match circuitry by incrementing an entry in the counter table referenced by the counter table index) must necessarily be present in Gai. Indeed, the counter action (CNT) of Gai is “typically used to record traffic flow statistics.” Gai, column 12, line 63. Any matching occurring in Gai need not make use of the counter table, but could rather be a simple match status, among other possibilities.

Simply put, there is nothing either explicit or inherent in Gai that discloses “the local memory also to store a counter table, wherein the action in a rule table entry comprises an index into the counter table, the action unit responding to the counter table index and a match indicated by the match circuitry by incrementing an entry in the counter table referenced by the counter table index,” as set forth in amended claim 10. For at least this reason, the Applicant submits that amended claim 10 is patentable under 35 U.S.C. 102(e) over Gai, and is therefore allowable.

Responsive to the Advisory Action dated January 7, 2009

The Examiner states at page 2 of the Advisory Action the “claims merely recite very basic operations in retrieving data from a CAM in response to an indturction [sic].” To the best of the Applicant’s understanding, the Examiner intended to state “in response to an instruction.” The Examiner also stated at page 2 that “Gai has a CAM operated exactly in the same manner [as the present claims].” The Applicant respectfully disagrees with both assertions and directs the attention of the Examiner to the arguments set forth below with reference to the claims, which appear to have not yet been directly addressed by the Examiner.

Nevertheless, in the interests of advancing the prosecution of the present application toward allowance, the Applicant amends claim 1 to incorporate the limitations of claims 4 and 5, and claims 4 and 5 have correspondingly been cancelled. These limitations set forth “wherein performing the action comprises incrementing a counter specified in the first packet rule, wherein the counter is located in a local memory area accessible by each packet processing engine, and wherein incrementing the counter comprises blocking other processors from accessing the counter during the increment.”

The Examiner has not identified where in the prior art these limitations are taught. Instead, the Examiner suggested in the Office Action dated February 21, 2008 at page 4, referring to the previous limitation of claim 5 (among others), that the wherein clauses “merely consist of non-functional descriptive material,” with no other explanation for the rejection. It is not clear to the Applicant what is meant by “non-functional descriptive material,” but in any case, the Applicant respectfully submits that these limitations set forth an embodiment of the invention, have a purpose, and are supported at, for example, the following excerpt of the detailed description:

Once block 412 loads the packet data, block 414 masks the packet data using the three-word packet data mask from the current rule. Block 416 then compares the masked data with the three-word packet data pattern specified in the current rule. Decision block 418 branches to either block 420 or block 422, depending on the result of the comparison. When the comparison evaluates false, control passes to block 422, which unsets the PREV_TRUE flag in preparation for the next rule. When the comparison evaluates true, block 420 sets the PREV_TRUE flag in preparation for the next rule. Also, block 420 calculates a counter address using the rule's counter offset and the counter table start location in the scratchpad memory, and then increments the counter at that address. In this embodiment, the scratchpad memory supports an atomic increment operation, such that one processor thread can increment a counter in a manner that blocks other processors and threads from simultaneously incrementing the same counter.

(Specification, page 9, lines 1-12.)

For at least the reasons set forth herewith, and in addition to those reasons set forth below, the Applicant submits that amended claim 1 is patentable under 35 U.S.C. 102(e) over Gai, and is therefore allowable.

Claim Rejections – 35 U.S.C. § 102

Claims 1-11, 13-15 and 27-30 stand rejected under 35 U.S.C. 102(e) as being anticipated by Gai (US 6,892,237). The rejection is respectfully traversed.

Claim 1 sets forth, in part, “on at least one of the packet processing engines, while processing a packet and in response to the execution instructions, loading a first packet rule from the dynamic packet rule set, comparing packet data at the packet offset specified in the first packet rule to the data pattern specified in the first packet rule, and, when the comparison indicates a match, performing an action indicated by the action code specified in the first packet rule.”

The Examiner suggests the RAM output 500 of Gai (FIG. 5) to be the dynamic packet rule set (and apparently, to be the first packet rule as well) of claim 1, the offset field 516 of Gai (FIG. 5) to be the packet offset of claim 1, the 65-bit instruction-specific data area 514 of Gai (FIG. 5) to be the data pattern of claim 1, the op code field 508 of Gai (FIG. 5) to be the action code of claim 1, and the subroutine stack 328 of Gai (FIG. 3) to be the instruction store of claim 1. Office Action dated February 21, 2008, page 3.

However, if the RAM output 500 is the first packet rule, and if the offset field 516 is the packet offset, then Gai fails to disclose comparing packet data at the alleged packet offset 516 to

the alleged data pattern 514 specified in the alleged first packet rule 500. Rather, Gai discloses a comparison between message data portion 310 of Gai (FIG. 4) and regular expressions in CAM 304. Gai, column 20, lines 24-26; column 21, lines 51-56; column 22, lines 43-46; and column 24, lines 11-15. For at least this reason, the Applicant submits that claim 1 is patentable under 35 U.S.C. 102(e) over Gai, and is therefore allowable. Based at least on their dependency from claim 1, and for their own merits, claims 7-8 are in allowable form.

Claim 2 sets forth the method of claim 1: “wherein the data pattern in each rule comprises a mask and a bit pattern, and wherein comparing packet data to the data pattern comprises masking the packet data using the mask, and comparing the masked packet data to the bit pattern.”

Claim 3 sets forth the method of claim 2: “wherein the shared memory comprises a content-addressable memory (CAM), wherein the data pattern for at least some rules are stored in the CAM, and wherein masking the packet data and comparing the masked packet data to the bit pattern are performed by the CAM for data patterns stored in the CAM.”

The Examiner suggests that the teachings of claim 2 and 3 are inherent in the CAM of Gai. Office Action dated November 4, 2008, page 4. However, the Examiner is reminded that “[t]he fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic. . . . To establish inherency, the extrinsic evidence 'must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill'” *See* MPEP 2112, Requirements of Rejection Based on Inherency; Burden of Proof, IV. Examiner Must Provide Rationale Or Evidence Tending To Show Inherency, *citing In re Robertson*, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999).

The Applicant submits that this burden has not been met. For example, the Examiner proposes that “[m]asking is inherent in CAM because it is required to mask bits for comparison.” The Applicant respectfully disagrees. While bits certainly may be masked and then compared, such masking need not be necessarily present to perform a bit comparison. Gai teaches a “mask applied to determine whether the particular cells [of CAM 304] of its block are ‘care’ or ‘don’t care’.” Gai, column 8, lines 59-62. But Gai fails to teach, whether explicitly or inherently, masking the packet data using a mask, and comparing the masked packet data to the bit pattern of the data pattern, as set forth in claim 2. Gai also fails to teach that such masking/comparison function is performed by the CAM, as set forth in claim 3. For

at least this reasons, and for their dependency from claim 1, the Applicant submits that claims 2 and 3 are patentable under 35 U.S.C. 103(e) over Gai, and are therefore allowable.

Claims 4 and 5 have been cancelled and their limitations have been incorporated into claim 1.

Claim 6 sets forth the method of claim 1, “wherein performing the action comprises loading a second packet rule specified in the first packet rule.” The Examiner suggests that “[a]ll entries in Gai’s CAM are meant to be accessed and searched.” Office Action dated February 21, 2008, page 4. While this may be true, Gai nevertheless fails to specifically teach that a second packet rule is specified in the first packet rules, much less that performing the action comprises loading the second packet rule specified in the first packet rule. For at least this reason, claim 6 is likewise in allowable form.

Claim 9 sets forth the method of claim 1, “wherein writing the dynamic packet rule set comprises arranging the rules in the set in order based on packet offset, with the rule having the smallest packet offset appearing first in the set.” The Examiner states at page 4 of the Office Action dated February 21, 2008, that “[t]he ‘wherein clauses’ merely consist of non-functional descriptive material.” The Applicant respectfully disagrees. While the limitations of claim 9 may indeed be descriptive of an embodiment of the invention, there is nothing to suggest that they are non-functional. Moreover, the Examiner is reminded that “the prior art reference (or references when combined) must teach or suggest all the claim limitations.” MPEP 706.02(j) Contents of a 35 U.S.C. 103 Rejection. For at least this reason, and for its dependency from claims 1 and 4, the Applicant submits that claim 5 is allowable.

Claim 10 has been amended to incorporate the limitations of claim 12, and claim 12 has been correspondingly cancelled. For reasons mentioned above, the Applicant submits that independent claim 10 is now in proper form for allowance, as are dependent claims 11 and 13-15.

Claims 27-30 have been cancelled.

Allowable Subject Matter

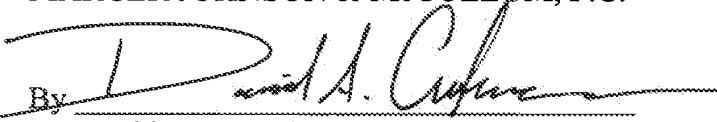
Claims 16-26 are allowed. The Applicant thanks Examiner Eng for acknowledging the patentable subject matter of these claims.

For the foregoing reasons, reconsideration and allowance of the claims is requested.
Please telephone the undersigned at (503) 222-3613 if it appears that an interview would be helpful in advancing the case.

Respectfully submitted,

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